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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,677	01/28/2000	Kaoru Sato	43890-401	2531

20277 7590 10/06/2005

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WASHINGTON, DC 20005-3096

EXAMINER

LEO, LEONARD R

ART UNIT	PAPER NUMBER
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3753

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/493,677	SATO ET AL.	
	Examiner	Art Unit	
	Leonard R. Leo	3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4-9, 15, 17, 19-21, 23 and 25-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-9, 15, 17, 19-21, 23, 25-33 and 36-38 is/are rejected.
- 7) ☒ Claim(s) 34 and 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The amendment filed July 18, 2005 has been entered. Claims 1, 4-9, 15, 17, 19-21, 23 and 25-38 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 36-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation of “a surface of said heat receiving face closest to the heat sink” is not clearly understood. The “surface” is part of the “heat sink.” The merits of the claims has not been considered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 29 is rejected under 35 U.S.C. 102(b) as being anticipated by Yu (Figures 1-3).

Claim 29 is rejected under 35 U.S.C. 102(b) as being anticipated by Coe (3,220,471). In Figure 2, the surface at reference numeral 13 is read as the “heat receiving face.”

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-6, 9, 15, 17, 19-21, 25-28 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu in view of Hinshaw.

Yu discloses all the claimed limitations except an uninterrupted fluid path in the direction of the column.

Hinshaw discloses a heat sink 10 comprising a plurality of first and second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling (column 2, lines 51-56).

Since Yu and Hinshaw are both from the same field of endeavor and/or analogous art, the purpose disclosed by Hinshaw would have been recognized in the pertinent art of Yu.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Yu second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling as recognized by Hinshaw.

Regarding claims 15 and 33, the air blowing means 4 of Yu is mounted on the heat sink to provide flow in a direction transverse to the heat receiving face.

Regarding claims 20-21 and 27, Hinshaw discloses the convective cooling may be from on top of the heat sink. Regarding claim 27, in addition, the functional recitation “for blowing

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fluid in said direction in which the cross-sectional width of said column changes” has not been given patentable weight because it is narrative in form. In order to be given patentable weight, a functional recitation must be expressed as a "means" for performing the specified function, as set forth in 35 USC 112, 6th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. *In re Fuller*, 1929 C.D. 172; 388 O.G. 279.

Regarding claims 15 and 26, as disclosed in Figures 1-3 of Yu, the fins in at least one row extend at a common angle and extend at the same vertical height.

Claims 1, 5-7, 9, 15, 17, 19, 26-28 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coe (3,220,471) in view of Hinshaw.

Coe ('471) discloses all the claimed limitations except an uninterrupted fluid path in the direction of column.

Hinshaw discloses a heat sink 10 comprising a plurality of first and second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling (column 2, lines 51-56).

Since Coe ('471) and Hinshaw are both from the same field of endeavor and/or analogous art, the purpose disclosed by Hinshaw would have been recognized in the pertinent art of Coe ('471).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Coe ('471) second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling as recognized by Hinshaw.

Regarding claim 7, element 17 of Coe is read as part of the "column."

Regarding claim 27, the functional recitation "for blowing fluid in said direction in which the cross-sectional width of said column changes" has not been given patentable weight because it is narrative in form. In order to be given patentable weight, a functional recitation must be expressed as a "means" for performing the specified function, as set forth in 35 USC § 112, 6th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. *In re Fuller*, 1929 C.D. 172; 388 O.G. 279.

Claims 1, 4-9, 26, 28 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over North et al in view of Hinshaw.

North et al discloses all the claimed limitations except an uninterrupted fluid path in the direction of column.

Hinshaw discloses a heat sink 10 comprising a plurality of first and second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling (column 2, lines 51-56).

Since North et al and Hinshaw are both from the same field of endeavor and/or analogous art, the purpose disclosed by Hinshaw would have been recognized in the pertinent art of North et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in North et al second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling as recognized by Hinshaw.

Regarding claims 4 and 8, North et al discloses protrusions and/or recesses in Figure 1B.

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Claims 4, 8 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu in view of Hinshaw as applied to claims 1, 5-6, 9, 15, 17, 19-21, 25-28 and 30-33 above or Coe (3,220,471) in view of Hinshaw as applied to claims 1, 5-7, 9, 15, 17, 19, 26-28 and 30-33 above, and further in view of North et al.

The combined teachings of Yu and Hinshaw, or Coe (3,220,471) and Hinshaw discloses all the claimed limitations except protrusions and/or recesses on the pillar-type protrusions.

North et al discloses a cooling apparatus comprising a blower 46 (Figure 5) and a heat sink 10 having a plurality of fins 12 with protrusions and/or recesses (Figure 1B) for the purpose of enhancing the heat transfer capability (column 2, lines 51-53).

Since Yu or Coe (3,220,471) and North et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by North et al would have been recognized in the pertinent art of Yu or Coe (3,220,471).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Yu or Coe (3,220,471) pillar-type protrusions with protrusions and/or recesses for the purpose of enhancing the heat transfer capability as recognized by North et al.

Allowable Subject Matter

Claims 34-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The limitations are believed to further define the “protuberant section.”

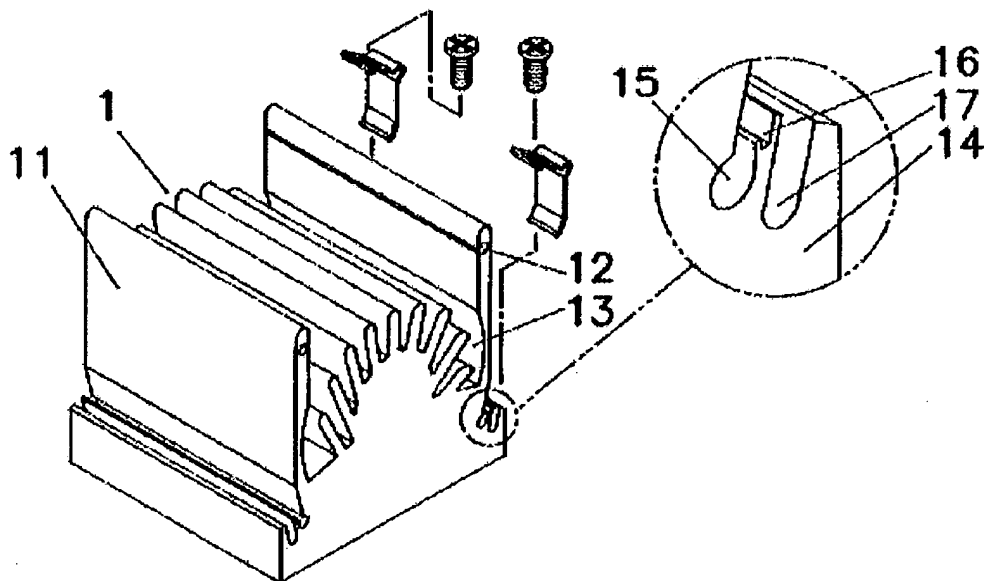
Response to Arguments

The rejection of claims 1, 5-7, 9, 15, 17, 19, 26-28 and 30-33 in view of North et al and Hinshaw (combined with the rejection in view of Coe and Hinshaw) has been withdrawn, since the rejection of claims 1, 4-9, 26, 28 and 30-32 in view of North et al and Hinshaw was already presented. Admittedly, North et al does not disclose the “cooling means mounted on said heatsink” as recited in claim 15 and its dependents.

Applicants’ arguments have been fully considered but they are not persuasive.

Initially, it is noted, the amendment of claim 29 broadens the scope of the claim.

Regarding applicants’ remarks with respect to the anticipatory rejection of claim 29 in view of Yu, Figure 2 (shown below) of Yu discloses a protuberant section 14. The claims do not specifically recite any structural details of the protuberant section. As such, there is nothing precluding the reading of this structure of Yu as a “protuberant section.”



Furthermore, although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26

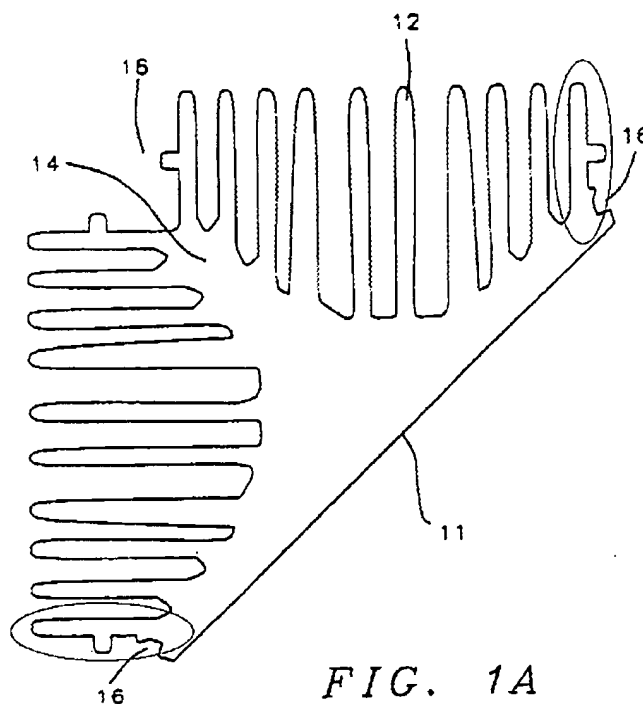
USPQ2d 1057 (Fed. Cir. 1993). It is noted, applicants cite Figures 6A and 6B as disclosing the protuberant section. However, applicants are reminded that Figure 3B is the elected species and further remarks pertaining to the elected species would be more productive. It is would be agreed that Figure 6A has a protuberant section similar to Figure 3B.

Regarding applicants' remarks with respect to the anticipatory rejection of claim 29 in view of Coe, the Examiner concurs that the mounting flange 13 is read as the "heat receiving face." Applicants are reminded that the claim merely recite a device with a desired structure, not in combination with a heat generating element. In effect, applicants' "heat receiving face" is merely a reference point in relation to other structural details, such as the column and plurality of fins. There is nothing in the claim that precludes the end surface of mounting flange 13 as shown in Figure 2 of Coe as being read as the "heat receiving face." Although there is no argument with respect to a protuberant section, element 31 meets this limitation.

Regarding applicants' remarks with respect to the combination of Yu and Hinshaw, the secondary reference merely teaches one of ordinary skill in the art to employ slits in the fins to form a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling. As discussed above, Yu discloses a protuberant section 14.

Regarding applicants' remarks with respect to the combination of Coe and Hinshaw, the secondary reference merely teaches one of ordinary skill in the art to employ slits in the fins to form a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling. As discussed above, Coe discloses a protuberant section 31.

Regarding applicants' remarks with respect to the combination of North et al and Hinshaw, the primary reference of North et al discloses a heat receiving face 11 "to mount circuit boards [43] having particularly high heat dissipation" (column 2, lines 53-55). The outermost elements (circled in Figure 1A on the next page) of North et al are read as "protuberant sections". Again, the secondary reference merely teaches one of ordinary skill in the art to employ slits in the fins to form a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling. As discussed above, Coe discloses a protuberant section 31.



Although applicants did not address the last grounds of rejection, i.e. claims 4, 8 and 23, the secondary reference of North et al clearly teaches one of ordinary skill in the art to employ fins having protrusions and/or recesses for the purpose of enhancing the heat transfer capability (Figure 1B, column 2, lines 51-53).

As noted above, the objected claims appear to further define the “protuberant section” and is deemed allowable.

No further comments are deemed necessary at this time.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

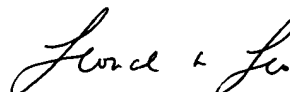
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard R. Leo whose telephone number is (571) 272-4916. The examiner can normally be reached on Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Mancene can be reached on (571) 272-4930. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


LEONARD R. LEO
PRIMARY EXAMINER
ART UNIT 3753

October 3, 2005